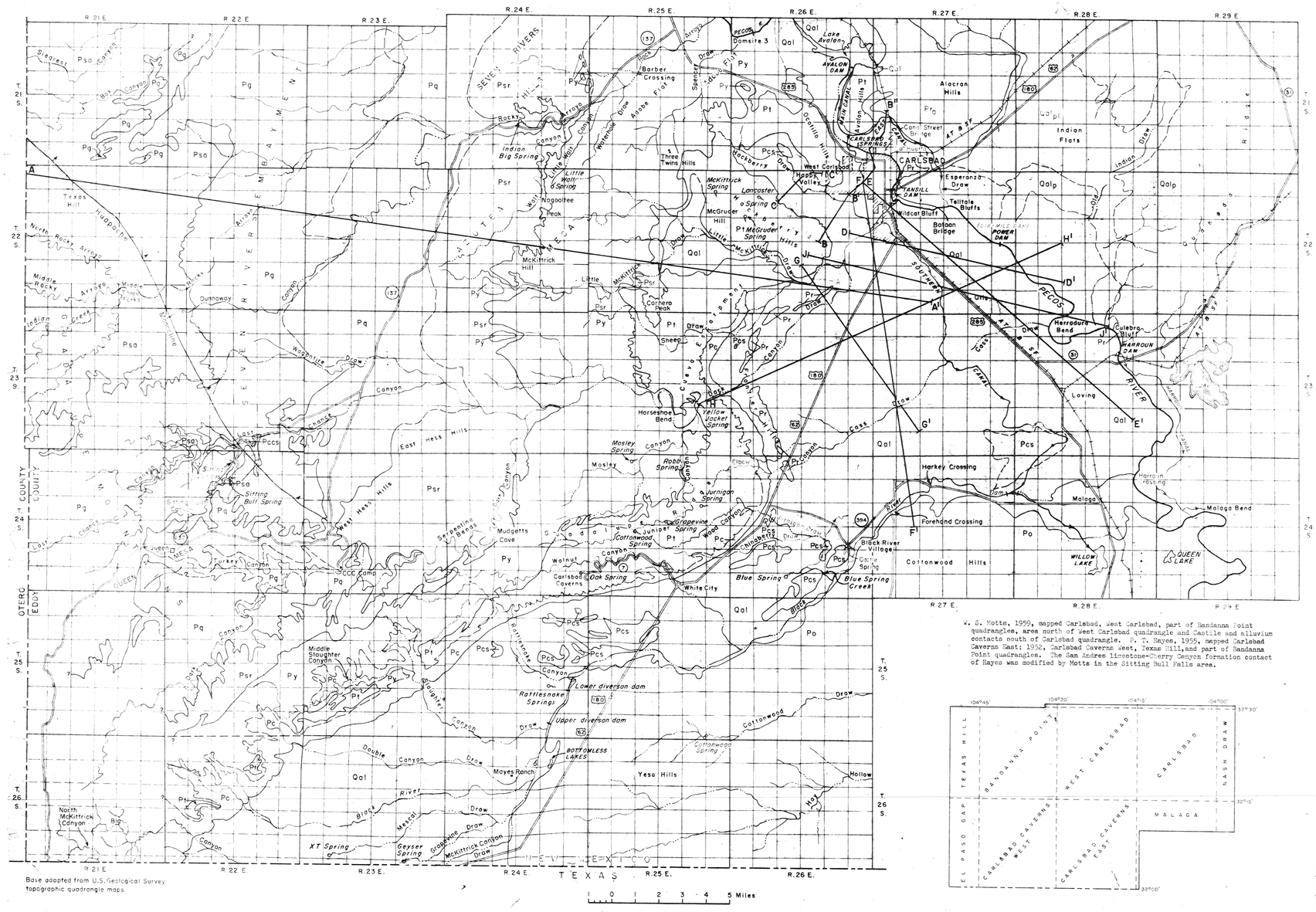

Base adapted from U.S. Geological Survey topographic quadrangle maps

W. S. Motts, 1959, mapped Carlsbad, West Carlsbad, part of Bandanna Point quadrangles, area north of West Carlsbad quadrangle and Castile and alluvium contacts south of Carlsbad quadrangle. P. T. Hayes, 1955, mapped Carlsbad Caverns East; 1952, Carlsbad Caverns West, Texas Hill, and part of Bandanna Point quadrangles. The San Andres limestone-Cherry Canyon formation contact of Hayes was modified by Motts in the Sitting Bull Falls area.

Plate 1.--General geologic map of the Carlsbad area, Eddy County, N. Mex.

EXPLANATION

Qal — Alluvium

Gravel, sand and silt with beds of caliche and limestone conglomerate, contains some eolian material. Sediments deposited mainly by the Pecos River and tributaries. Yields large quantities of water of slightly saline to good quality to irrigation wells

Qal$_{pl}$ — Alluvium (playa phase)

Playa material and reworked alluvial sand and silt, with some interbedded gravel. Locally, small hills capped by caliche and slumped dolomite of the Rustler formation. Considerable areas underlain by gypsum of the Ochoa series. Yields little to no water to wells

Qal$_p$ — Alluvium (pediment phase)

Includes some older alluvium, considerable areas interlain by residue of the Ochoa series. Most hills capped by sediment, gravels, and caliche, some hills are inliers of dolomite of the Rustler formation. Swales underlain by playa materials, dune sands and reworked alluvium. Yields small amounts of slightly saline water to wells

Ochoa series

Pr | Pr$_d$ — Rustler formation

Area Pr - Vesicular dense dolomite underlain by gypsum and silt. In many places dolomite assumes anomalous dips resulting from removal of underlying evaporites. Contains reddish silt and insoluble residue that may be Salado or Rustler formations. Yields small quantities of water of poor quality to stock wells. Area Pr$_d$ - Rustler formation is mostly mantled by thin alluvium, but locally alluvium may reach appreciable thickness

Po — Ochoa series, undifferentiated

Surface exposures are chiefly gypsum and silt. Reddish silt and insoluble residue may be Salado or Rustler formation. Local areas capped by dolomite of the Rustler formation. Rustler formation yields small amounts of slightly saline water to wells

Pcs — Castile formation

Surface exposures are gypsum altered from anhydrite. Contains reddish silt and insoluble residue that may be Salado or Rustler formation. Yields small amounts of water of poor quality to stock wells in Black River valley

SHELF FACIES

Guadalupe series

Carlsbad group

Pt — Tansill formation

Thin- to medium-bedded dolomite and limestone with several interbedded silt beds in carbonate facies. Grades into gypsum and red silts in back reef 4 to 6 miles from reef escarpment. Yields small amounts of water of fair to good quality to wells and springs in carbonate facies

Py — Yates formation

Thin- to medium-bedded dolomite and limestone interbedded with many brownish sand and silt beds in carbonate facies. Carbonate facies grades into gypsum and silt beds in shelf area 5 to 7 miles from reef escarpment. Yields small amounts of water of good quality to domestic and stock wells in carbonate facies

Psr — Seven Rivers formation

Dolomite and limestone interbedded with several sandstone and siltstone beds in carbonate facies. Grades into gypsum and silt in shelf area 12 to 15 miles from reef escarpment. Yields small amounts of water of good quality to domestic and stock wells in carbonate facies

Po — Capitan limestone

A massive microcrystalline phase of reef material and a detrital and fragmental phase of reef talus material. Yields large quantities of water to wells in the vicinity of Carlsbad and the foothills of the Guadalupe Mountains southwest of Carlsbad. Yields water of good to fair quality west and southwest of Carlsbad

Hueco group

Pq — Queen formation

Dolomite interbedded with many brown sand and silt beds in carbonate facies. Grades into evaporite facies in shelf area 15 to 18 miles north and northwest from Carlsbad. Yields small amounts of water of good to fair quality west of Carlsbad.

Pg — Grayburg formation

Principally dolomite interbedded with brownish fine sand to silt beds. Carbonate facies grades into evaporite facies in shelf area about 20 miles west from reef escarpment. Yields small amounts of water of good quality west of Carlsbad

BASIN FACIES

Pcs — Cherry Canyon formation

Hard, relatively impermeable sandstone and siltstone cemented with calcium carbonate. Yields no water to wells or springs

Leonard series

Psa — San Andres limestone

West from Carlsbad upper part of formation consists of thick bedded dolomite. Lower part consists of more thinly bedded dolomite with considerable chert. Some sandstone beds occur, particularly near the base. In the Carlsbad area the San Andres is exclusively in the carbonate facies. Yields small amounts of water of good quality west of Carlsbad

Contact

Indefinite or gradational where dashed

Hueco Monocline

A ——— A'

Line of geologic cross section